Attorney Docket No.: P-5450-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	DESHPANDE, Nikhil et al.	Examiner:	WEST, LEWIS G
Serial No.:	10/608,110	Group Art Unit:	2618
Filed:	June 30, 2003		
Title:	METHOD AND APPARATUS FOR FINDING AND SHARING DEVICE CAPABILITIES		

DECLARATION OF PRIOR INVENTION UNDER 37 C.F.R. § 1.131

This declaration is to establish invention of the subject matter of the rejected claims in the above-identified patent application prior to November 26, 2002, the effective date of the reference on which the rejection is based. It is filed together with an Amendment to the above -identified patent application.

1. We, the undersigned, hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the present application or any other patent issued thereon.

2. We are the named co-inventors of the above-identified patent application.

3. The acts relied upon to establish the date prior to the reference date were carried out in the United States or in Israel (a WTO member country).

4. We provided a disclosure of the invention to Intel Legal Team on December 3, 2001. Attached as Exhibit A is a copy of the disclosure which was provided to Intel Legal Team, including a stamp testifying on the date of receipt of the disclosure by Intel Legal Team. The disclosure includes a description of each element of the pending claims prior to November 26, 2002.

Regarding claim 1, the disclosure includes an apparatus comprising a computer to match a request to share a desired capability by comparing stored data of a requesting device with stored data of a sharing device having the desired capability in the vicinity of the requesting device and to provide the requesting device with directions to locate the sharing device having the desired capability (see CSS server in pages 3 and 4 of the disclosure).

Regarding claim 2, the disclosure includes the apparatus of claim 1, wherein the stored data of the requesting device comprises presence data of the requesting device and wherein the stored data of the sharing device comprises presence data of the sharing device (see in pages 3 and 4 of the disclosure).

Regarding claim 3, the disclosure includes the apparatus of claim 1, further comprising a communication interface to provide a connection to a communication system (see in pages 3 and 4 of the disclosure).

Regarding claim 4, the disclosure includes the apparatus of claim 1, further comprising a database application to enable the computer to match said stored data of the requesting device and the sharing device (see in pages 3 and 4 of the disclosure).

Regarding claim 5, the disclosure includes an apparatus comprising a request generator to provide a request to share a desired capability; and a locator to provide a location information to a server that is able to provide directions to locate a sharing device having the desired capability in a vicinity of the server (see the client device, the CSS server and the location detection mechanism in pages 3 and 4 of the disclosure).

Regarding claim 6, the disclosure includes the apparatus of claim 5, further comprising an input/output interface to provide connection to the sharing device (see in pages 3 and 4 of the disclosure).

Regarding claim 7, the disclosure includes the apparatus of claim 6, wherein the input/output interface comprises a wireless transceiver (see in pages 3 and 4 of the disclosure and the pictorial view in page 4 of the disclosure).

Regarding claim 8, an infrared transceiver was known to the inventors prior to November 26, 2002.

Regarding claim 9, the disclosure includes the apparatus of claim 5, wherein the server is a presence server (see in pages 3 and 4 of the disclosure).

Regarding claim 10, a radio triangulation system was known to the inventors prior to November 26, 2002.

Regarding claim 11, a global positioning system was known to the inventors prior to November 26, 2002.

Regarding claim 12, the disclosure includes a communication system comprising a server to provide capabilities sharing service; and a mobile station to request and receive capabilities sharing service from the server based on vicinity of the mobile device to a sharing device having a desired capability (see in pages 3 and 4 of the disclosure).

Regarding claim 13, the disclosure includes the communication system of claim 12 wherein the server comprises a computer to match a request to share a desired capability by comparing data of a requesting device in a requesting devices presence data with data of a sharing device having the desired capability in the vicinity of the requesting device in a sharing devices presence data and to provide to the requesting device directions to the sharing device having the desired capability (see in pages 3 and 4 of the disclosure).

Regarding claim 14, the disclosure includes the communication system of claim 12 wherein the mobile station comprises a request generator to provide a request to share a desired capability; and a locator to provide a location information to a server that is able to provide directions to locate a sharing device having the desired capability in a vicinity of the server (see in pages 3 and 4 of the disclosure).

Regarding claim 15, the disclosure includes a method comprising receiving from a mobile station a request to share a desired capability located in the vicinity of said mobile station; and matching a sharing device to the request by comparing presence information and

said desired capability of said mobile station to stored capabilities and presence information of sharing devices in the vicinity of the mobile station to find a matching sharing device (see in pages 3 and 4 of the disclosure and the flowchart in page 5 of the disclosure).

Regarding claim 16, the disclosure includes the method of claim 15 further comprising sending to said mobile station a notification identifying the location of said matching sharing device (see in page 3 of the disclosure).

Regarding claim 17, the disclosure includes the method of claim 15 further comprising sending a notification to said mobile station if no match was found (see in page 3 of the disclosure).

Regarding claim 18, the disclosure includes the method of claim 15 further comprising enabling a connection between said mobile station and said matching sharing device (see in pages 3 and 4 of the disclosure and the flowchart in page 5 of the disclosure).

Regarding claim 19, the disclosure includes the method of claim 15 further comprising updating the presence information of said mobile station and of said matching sharing device (see in pages 3 and 4 of the disclosure and the flowchart in page 5 of the disclosure).

Regarding claim 20, the disclosure includes the method of claim 15, wherein receiving said request comprises receiving an identification of said mobile station (see in pages 3 and 4 of the disclosure and the flowchart in page 5 of the disclosure).

Regarding claim 21, the disclosure includes the method of claim 15, wherein receiving said request comprises receiving an updated location of said mobile station (see in pages 3 and 4 of the disclosure and the flowchart in page 5 of the disclosure).

Regarding claim 22, the disclosure includes an apparatus comprising a request generator to provide a request to share a desired capability; and a locator to provide a location information to a server that is able to provide directions to locate a sharing device having the desired capability in a vicinity of the server; and an omni-directional antenna to transmit the request to the server (see in pages 3 and 4 of the disclosure and the flowchart in page 5 of the disclosure). An omni-directional antenna was known to the inventors prior to November 26, 2002.

Regarding claim 23, the disclosure includes the apparatus of claim 22, further comprising an input/output interface to provide connection to the sharing device (see in pages 3 and 4 and the pictorial view in page 4 of the disclosure).

Regarding claim 24, the disclosure includes the apparatus of claim 23, wherein the input/output interface comprises a wireless transceiver (see in pages 3 and 4 and the pictorial view in page 4 of the disclosure).

Regarding claim 25, a global positioning system (GPS) receiver was known to the inventors prior to November 26, 2002.

Regarding claim 26, the disclosure includes an article comprising a storage medium having stored thereon instructions that, when executed by a processing platform, result in receiving from a mobile station a request to share a desired capability located in the vicinity of said mobile station; and matching a sharing device to the request by comparing presence information and said desired capability of said mobile station to stored capabilities and presence information of sharing devices in the vicinity of the mobile station to find a matching sharing device (see CSS server in pages 3 and 4 of the disclosure).

Regarding claim 27, the disclosure includes the article of claim 26, wherein the instructions when executed further result in sending to said mobile station a notification identifying the location of said matching sharing device (see page 3 of the disclosure).

Regarding claim 28, the disclosure includes the article of claim 26, wherein the instructions when executed further result in updating said presence information of said mobile station and said presence information of said matching sharing device (see pages 3 and 4 of the disclosure and the flowchart in page 5 of the disclosure).

5. A determination to file a U.S. patent application covering the present invention was made on February 21, 2002. Attached as Exhibit B is a copy of an e-mail transmission sent to one of the inventors, informing the inventor of the determination to file a US patent application covering the invention.

6. The firm of Eitan, Pearl, Latzer & Cohen-Zedek (EPL&C) was assigned to draft the application on October 8, 2002. On April 6, 2003, the work on the application was reassigned from EPL&C to Mr. Moshe Vegh, a patent attorney of Intel Corporation, after a first draft of the application was completed by the EPL&C patent attorney. Mr. Vegh completed the patent application which was filed on June 30, 2003. Attached as Exhibit C is a copy of Intel U.S. Patent Application File Request Form. The attached form is a record regularly kept in the course of the assignee's business and created contemporaneously with the events recorded therein, recording assignment of the work on this application to EPL&C on October 8, 2002, and reassigning of the work from EPL&C to Intel Corporation on April 6, 2003 (see the Notes section).

The Inventors:

DESHPANDE, Nikhil

KNAUERHASE, Robert

NGUYEN, Du

SENGUPTA, Uttam

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The Inventors:

DESHPANDE, Nikhil

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KNAUERHASE, Robert

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The Inventors:

DESHPANDE, Nikhil

KNAUERHASE, Robert

NGUYEN, Du

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EXHIBIT A

INTEL CONFIDENTIAL

23507

INTEL INVENTION DISCLOSURE

WIRELESS / IAL / BET

DATE: Nov 7, 2001

It is important to provide accurate and detailed information on this form. The information will be used to evaluate your invention for possible filing as a patent application. When completed, please return this form to the Legal Department at JF3-147. If you have any questions, please call 264-0444 or 264-1476.

RECEIVED

DEC 03 2001

PATENT DATABASE GROUP
INTEL LEGAL TEAM

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Inventor: Knauerhase (Last Name) Robert (First Name) C. (Middle Initial)

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Inventor: Sengupta (Last Name) Uttam (First Name) Middle Initial

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Supervisor* Tapper, Lee WWID 10025814 Phone (503) 264-4866 M/S: JF3-377

(PROVIDE SAME INFORMATION AS ABOVE FOR EACH ADDITIONAL INVENTOR)

2. Title of Invention: Scheme for finding and sharing device capabilities

3. What technology/product/process (code name) does it relate to (be specific if you can): WAN, WLAN, GPRS technology

4. Stage of development (i.e. % complete, simulations done, test chips if any, etc.): Concept

5. (a) Has a description of your invention been, or will it shortly be, published outside Intel:

   NO: __X__ YES: _____ If YES, was the manuscript submitted for pre-publication approval? _____

   IDENTIFY THE PUBLICATION AND THE DATE PUBLISHED: _____

   (b) Has your invention been used/sold or planned to be used/sold by Intel or others?

   NO: __X__ YES: _____ DATE WAS OR WILL BE SOLD: _____

   (c) Does this invention relate to technology that is or will be covered by a SIG (special interest group)/standard/ or specification?

   NO: __X__ YES: _____ Name of SIG/Standard/Specification: _____

   (d) If the invention is embodied in a semiconductor device, actual or anticipated date of tapeout? __n/a__

   (e) If the invention is software, actual or anticipated date of any beta tests outside Intel _Not known at this time_____

6. Was the invention conceived or constructed in collaboration with anyone other than an Intel blue badge employee or in performance of a project involving entities other than Intel, e.g. government, other companies, universities or consortia? NO: __X__ YES: _____ Name of individual or entity: _____

7. Is this invention related to any other invention disclosure that you have recently submitted? If so, please give the title and inventors:

PLEASE READ AND FOLLOW THE DIRECTIONS ON HOW TO WRITE A DESCRIPTION OF YOUR INVENTION

Please attach a page to this form, DATED AND SIGNED BY AT LEAST ONE PERSON WHO IS NOT A NAMED INVENTOR, to provide a description of the invention, and include the following information:

1. **Describe in detail what the components of the invention are and how the invention works.**

Problem: Mobile professionals are required to carry multiple devices because those devices have specific roles. These roles are primarily determined by the device capabilities. For example, a professional carries an IPAQ with him because of ease of carrying, instant on, fast access to his/her calendar inf. Etc. On the other hand, the same professional is required to carry a laptop for viewing the PowerPoint foils, graphics (good output display capability). This invention proposes a scheme with which mobile professional can "borrow" the desired capabilities from other devices which he may not be carrying. With the proposed invention, following user scenario would be possible:

Fred is carrying his IPAQ loaded with the PowerPoint presentation. At the airport, he realizes he needs to change some foils in the presentation. He requests "capability sharing services" (CSS) by connecting to the CSS server. The server responds by letting him know the location of the devices (in his proximity), which have the desired capability (good output display). Fred selects the device closest to him and walks to the kiosk where it is located. The CSS server connects Fred's IPAQ to the selected devices output display and now Fred can view the foils on the "borrowed device".

This invention has following components:

1. Location detection mechanism on the client device
2. CSS server keeping track of available devices and their capabilities

Location based mechanism: The client application will use any location detection mechanism to let the CSS server know its location. When a service is requested, the client will register with the CSS server.

CSS Server: This is key component of this invention. This server could be a presence server such as Next generation collaboration server that Mobile Data services team in IAL has developed. All the devices that are offering CSS will register their "presence" with the CSS server. The presence info for the devices could be:

CSS Offering Devices (COD Presence Information):

Device 1 – Good input capability – Gate A15 – In use
Device 2 – Good Output capability – Gate B7 – In use
Device 3 – Good Output capability – Gate B3 – Available

CSS Requesting Devices (CRD Presence Information):

Device A (Fred) – Request :Output service – Gate B6 – Connected to NONE
Device F (Sue) – Request input service – Gate A16 – Connected to Device1

The CSS server thus would know about the following of the devices that are offering CSS:

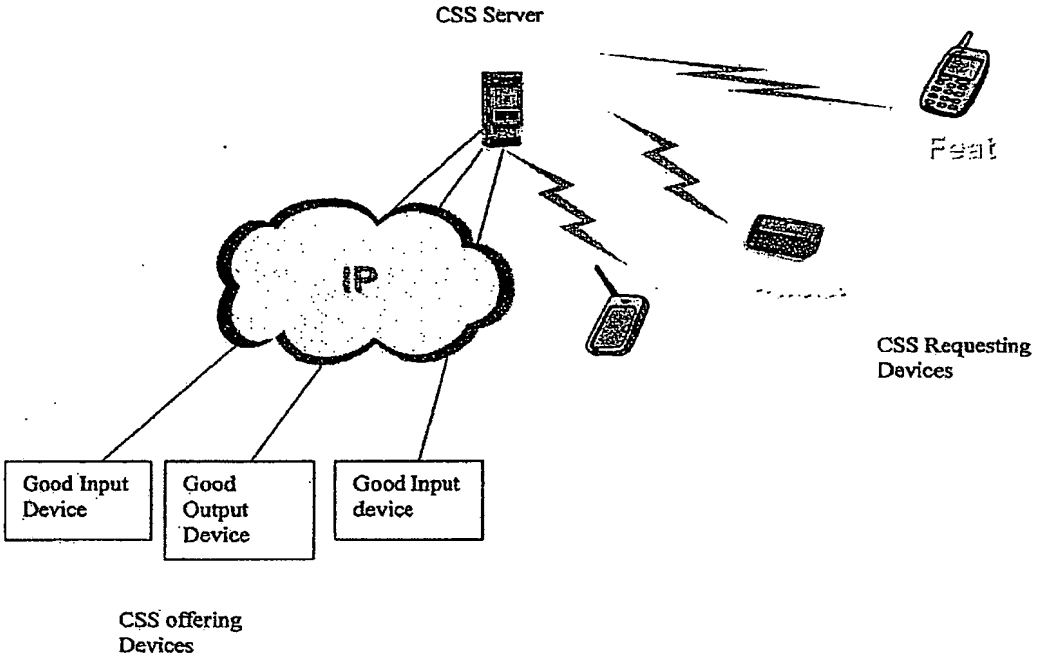
1. Device ID
2. IP address

3. Device capabilities
4. Device location
5. Device status (in use/available)

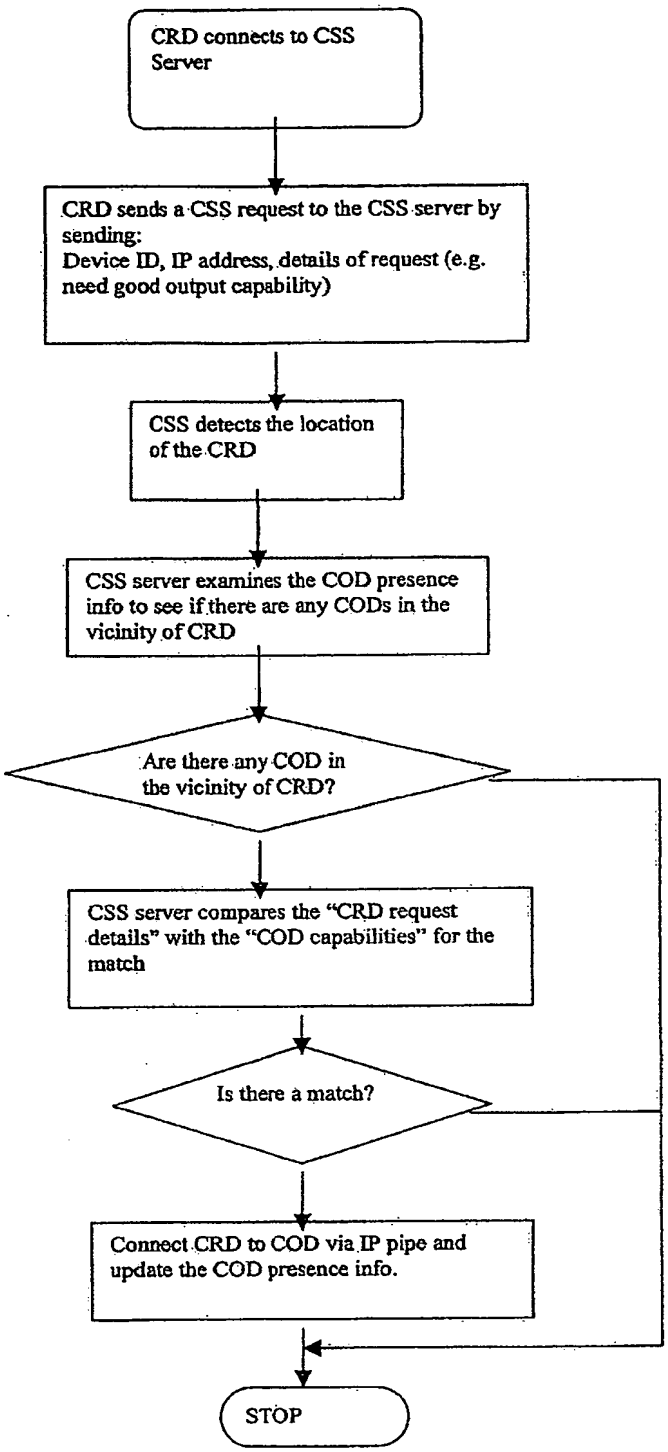
The CSS server would know about the following of the devices that are requesting CSS:

1. Device ID
2. IP address
3. Device capabilities
4. Device location

The purpose of the CSS server is to receive CSS requests from devices and find the CSS offering device that will match the request made by the device. Below is the pictorial view of the scheme and the CSS mechanism flowchart.



CSS Flowchart:
CRD – CSS Requesting device
COD – CSS offering device



2. Describe advantage(s) of your invention over what is done now.

The functionality described herein simply does not exist today. Today instant messaging servers connect people but not devices. Especially, they don't have ability to share the device functionality of the devices for more enrighed user experience. <Need help here>

3.Value of your invention to Intel (how will it be used?).

- Mobile Data services group in IAL (now CTG) is working on the messaging and presence server (next generation collaboration server) that allows users to share data and messages over the WAN link. The server also has notion of registering the location of the device and user. The invention described could be an extension of the existing server. The CSS server could be deployed on Intel platforms for competitive advantages. If this functionality is patented, it could be ensured that the NGC server offers "CSS" when it detects that the client is Intel platfom based. This ties directly into PCA platform. The client application that uses the scheme could be part of the PCA middleware application that gives extra incentive for mobile users to use PCA enabled devices.

4. Identify the closest or most pertinent prior art that you are aware of.

- NONE.

6. Who is likely to want to use this invention or infringe the patent if one is obtained and how would infringement be detected?

We believe in future, the instant messaging systems will start offering this via presence infrastructure. Today MSN, Yahoo allow you to share data/messages via their server; next step is to share device capabilities via the same infrastructure. The invention could also be easily transformed into a service offering at hotspots such as airports, hotels etc. Infringements could be easily detected by monitoring the service offerings from these vendors and others in the mobile collaboration space.

*HAVE YOUR SUPERVISOR READ, DATE AND SIGN COMPLETED FORM

DATE: _____ SUPERVISOR: _____

BY THIS SIGNING, I (SUPERVISOR) ACKNOWLEDGE THAT I HAVE READ AND UNDERSTAND THIS DISCLOSURE, AND RECOMMEND THAT THE HONORARIUM BE PAID

EXHIBIT B

Yosi Barkai

From: Deshpande, Nikhil M [nikhil.m.deshpande@intel.com]
Sent: Thursday, November 02, 2006 2:45 AM
To: Yosi Barkai
Subject: FW: NOTIFICATION OF PATENT APPLICATION FILINGS

Yosi,
Here is the email confirming that a decision was made to file the patent On 2/21/2002.

Thanks,
-Nikhil

Nikhil Deshpande, Ph.D.
Business Development Manager
Systems Technology Lab,
Corporate Technology Group
Intel Corp.
Desk (503) 264-8744
Mobile (503) 970-8546

"Business has only two functions - Marketing and Innovation.", M. Kundera, Czech Novelist
-----Original Message-----
From: patent.database.group@intel.com
[mailto:patent.database.group@intel.com]
Sent: Thursday, February 21, 2002 1:00 AM
To: nikhil.m.deshpande@intel.com
Subject: NOTIFICATION OF PATENT APPLICATION FILINGS

To: NIKHIL DESHPANDE
E-mail: nikhil.m.deshpande@intel.com
Employee No.: 10648680

From: KENNETH SEDDON
Phone: 480-554-9732

Subject: NOTIFICATION OF PATENT APPLICATION FILINGS

-

I am pleased to inform you that a determination has been made to file a U.S. patent application(s) covering your invention(s) as follows:

23507
SCHEME FOR FINDING AND SHARING DEVICE CAPABILITIES

A patent attorney will be assigned to prepare the application(s) and will be contacting you for more details on your disclosure(s). Please cooperate with the attorney in answering questions and providing support for your invention(s). The attorney will use this information to prepare a draft patent application(s).

Once a draft of the application is prepared, you will be asked to review the draft to ensure that the most current version of the invention(s) is disclosed and suggest revisions prior to filing the application(s) with the U.S. Patent and Trademark Office. It is essential that you make your review of the application(s) a

priority as patent rights can be lost for failure to timely file. Please do not take more than three weeks to review your application(s).

An honorarium will be paid to you once the patent application(s) is filed.
In the meantime, if you have any questions, please call me.

-

PLEASE NOTE: Our "new" electronic inventor notifications save Intel substantial time and money but do not currently have the capability to copy your manager. Please feel free to forward to your manager.

-

For future update information, please visit our web site at law.intel.com/PPG2.
(Please check your MS I.E. settings before accessing this web site.
In MS Internet Explorer, go to Tools, Internet Options, Connections, LAN Settings, under Proxy server, select Advanced, in the Exceptions, put the following text: *.intel.com)

EXHIBIT C

INTEL U.S. PATENT APPLICATION FILE REQUEST FORM

CONFIDENTIAL

COMPLETE AND RETURN FORM TO INTEL PATENT DATABASE GROUP WITHIN 2 DAYS. Date Opened: 10/09/2002

Return File To: Intel Patent Database Group TO BE FILED BY INTEL

Matter #: P15288 Intel Grp Atty: KMS/INTEL Work Atty: MV/INTEL

Matter Status: IN PROCESS

TYPE OF INTEL PATENT APPLICATION FILE

*Patent: Utility Design Reissue Reexam CPA (C) CIP (X) Divisional (D)

Title of File: SCHEME FOR FINDING AND SHARING DEVICE CAPABILITIES

INTEL DISCLOSURE AND FOREIGN FILING INFORMATION

*Disclosure number(s): 23507

*Product/Process: WAN, WLAN, GPRS TECHNOLOGY

Intel Committee: WIRELESS COMMUNICATIONS & CO Intel Group: CTG Intel Division: BET

Foreign Filing: NO Direct:

National Phase:

Notes: P15288 (23507) - OPENED AND ASSIGNED TO EPL&C PER KEN SEDDON'S EMAIL 10/8/02 -CP. P15288 - REASSIGNED WORK ATTY FROM EPL&C TO MV/INTEL PER MOSHE VEGH'S EMAIL 4/7/03 -CP.

*INTEL ABSTRACT CODES (Check One or More)

__PROCESS (C1)
__N or P MOS (C1A)
__Equipment (C1B)
__CMOS (C1C)
__Contacts (C1D)
__Flash (C1E)
__GaAs and SOS (C1F)
__Circuit element (C1G)
__Isolation/Insulation (C1H)
__BiCMOS (C1I)
__Analysis/Testing (C1J)
__Etching/Planarization (C1K)
__Metal (C1L)
__Polysilicon (C1M)
__Passivation (C1N)
__Masking/Resist (C1O)
__Deposition (C1P)
__Implantation (C1Q)
__DRAMs (C2)
__Sense amp (C2A)
__SRAMs (C3)
__Sense amp (C3A)
__EPROMS (C4)
__P-channel (C4A)
__N-channel (C4B)
__Flash (C4C)
__EE (C4D)
__Sense amp (C4E)
__Solid-State disk (C4F)
__Flash Card (PCMCIA) (C4G)
__Multibit Cell (C4H)
__Redundancy (C4I)
__Blocking (C4J)
__Write Automation (C4K)
__Minicard (C4L)
__Camera (C4M)
__FMM (C4N)
__Firmware Hub (FWH) (C4O)
__Security (C4P)
__Small Block (C4Q)
__FDI (C4R)
__Interface (C4S)
__Connector (C4T)
__Cell Phone (C4U)
__Charge Pump (C4V)
__Audio (C4W)
__Microprocessor (C5)
__Embedded (C5A)
__Buses Input/Output Devices (C5B)
__Protocol/CPU Interfacing (C5C)
__Adder/Multiplier Units (C5D)
__Numeric (C5E)
__Video/Graphics (C5F)
__Cache/memory Hierachy/ Memory/Virtual Memory (C5G)
__Memory Management/ Protection/Addressing (C5H)
__Instruction/Inst. Decoding/ Microcoding/Sequencing/ Microprogrammed Control (C5I)
__Pipeline/Parallelism (C5J)
__Clocking/Clock Generation/ Clock Multiplication (C5K)
__Addressing/Addressing Modes (C5L)
__Vector Processing (C5M)
__Registers/Files/Stacks (C5N)
__Multiprocessing/Dual (C5O)
__Initialization/Testing/ Debugging (C5P)
__Program/Program Control/ Interrupt/Status/Faults Exceptions (C5Q)
__RISC (C5R)
__Redundancy (C5S)
__SYSTEMS (C6)
__Bus (C6A)
__Supercomputers (parallel multiprocessors) (C6B)
__Compilers (C6C)
__Test Equipment (ICE) (C6D)
__BIOS (C6E)
__PCMCIA (thin removable functionality cards, i.e., memory, modem, network, etc.) (C6F)
__Magnetics (bubble memories) (C7)
__Buffers (C8)
__Packaging/Mounting/ Connector (C9)
__Logic (C10)
__Neural (C11)
__Miscellaneous (C12)
__General Memories (C13)
__Redundancy (C13A)
__Rambus-compatible (C13B)
__General Circuit (C14)
__Peripherals (C15)
__ROM (C16)
__Timing Clocks (C17)
__Power/Regulation (C18)
__Networks (C19)
__PLD (C20)
__Compression/Decompression (C21)
__Video/Graphics/Audio (C22)
__Algorithm (C22A)
__System (C22B)
__Sensor (C22C)
__Optics (C22D)
__3D (C22E)
__Display (C22F)
__Graphics Device (C22G)
__Test Equipment (C23)
__Video Teleconferencing (C24)
__Communication (C25)
__Software (C26)
__Graphics (C26A)
__Audio (C26B)
__Compiler (C26C)
__Operating System (C26D)
__Drivers (C26E)
__Other (C26F)
__IAL (C27)
__Internet/WWW Applications (C27A)
__Java Applics. (C27B)
__User Interfaces Consumer (C27C)
__Appliances Portable (C27D)
__Computing (C27E)
__Compilers (C28)
__Java Compilers (C28A)
__Java Just-in-Time (C28B)
__IA64 Compilers (C28C)
__Optimization (C28D)
__Circuits (C29)
__New Logic Family (C29A)
__Data Path (C29B)
__Chipsets (C30)
__Memory Control (C30A)
__Bridging (C30B)
__Firmware Hub (C30C)
__Design Tools (C31)
__Circuits (C31A)
__Layout (C31B)
__Logic (C31C)
__Validation/Test (C31D)
__Low Power (C31E)

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*Mandatory for original patent application. File will not be opened unless mandatory information is provided.

*INTEL ABSTRACT CODES (CONTINUED)

__CIRCUIT (C32)
__A/D (C32A)
__D/A (C32B)
__Amplifier (C32C)
__OP (Operational) (C32C2)
__RF (Radio Frequency) (C32c3)
__Isolator (C32D)
__Receiver (C32E)
__Atter Attenuator (C32E2)
__FM Demodulator (C32E3)
__Antenna Interface (C32E4)
__Line Driver (C32F)
__PLL (C32G)
__Frequency Multiplier (C32G2)
__Time Recovery (C32H)
__Filter (C32I)
__Adaptive (C32I2)
__Switched Capacitor (C32I3)
__Equalizer (C32I4)
__Echo Canceller (C32I5)
__Detector (C32J)
__Signal Generator (C32K)
__Oscillator (C32L)
__TEST (C32M)
__BIST (BUILTIN-S-TEST) (C32M2)
__CODING/MODULATION. (C33)
__Viterbi (C33A)
__Block (C33B)
__Trellis (C33C)
__FM (C33D)
__QAM (C33E)
__HUB/REPEATER (C34)
__Ethernet (C34A)
__MAC (C34A2)
__PHY (C34A3)
__Ring (C34B)
__MODEM (C35)
__Cable (C35A)
__DSL (C35B)
__PSTN (C35C)
__Voice and Data (C35C2)
__Wireless (C35D)
__NETWORK MANAGEMENT (C36)
__Agent (C36A)
__Network Discovery (C36B)
__Network Topology (C36C)
__Fault Tolerance (C36C2)
__Policy Based Management (C36D)
__PROXY (C36E)
__Software Distribution (C36F)
__Virus Protection (C36G)
__NETWORK OS (C37)
__NIC (C38)
__Architecture (C38A)
__Bus Master (C38A2)
__ATM (C38B)
__Device Driver (C38C)
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__MAC (C38D2)
__PHY (C38D3)
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__Media Independent Interface (C38D5)
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__Multi-threaded (C39A)
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__Instruction set (C39B2)
__Compiler (C39C)
__Bus (C39D)
__Memory (C39E)
__Micro-architecture (C39F)
__Memory Controller (C39G)
__Switch (C39H)
__Debugging (C39I)
__NETWORK COMM. PROTOCOLS (C40)
__Internet (C40A)
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__Bus. Method (C40D)
__Wireless (C40E)
__Home Networking (C40F)
__Phone Line (C40F2)
__Power Line (C40F3)
__Wireless (C40F4)

__SWITCH/ROUTER (C41)
__ATM (C41A)
__Ethernet (C41B)
__MAC (C41B2)
__PHY (C41B3)
__Load Balancer (C41C)
__XML (C41D)
__Routing (C41E)
__SECURITY (C42)
__Cryptography (C42A)
__Smartcard (C42B)
__VPN (C42C)
__Access Control (C42D)
__TELEPHONY (C43)
__Call Control/ Features (C43A)
__Circuits (C43B)
__Fax (C43C)
__ISDN (C43D)
__Bridge (C43D2)
__PBX (C43E)
__Video Conferecing (C43F
__Voice/Speech Processing (C3G